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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/673,049	10/10/2000	David C Alsop	UPN-3617	7690

7590

04/02/2003

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EXAMINER

LIN, JEYUHU

ART UNIT

PAPER NUMBER

3737

DATE MAILED: 04/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/673,049

Applicant(s)

ALSOP, DAVID C

Examiner

Jeoyuh Lin

Art Unit

3737

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 January 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 5-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 5-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Entry of Amendment

1. Applicant's amendment, filed on January 7, 2003, as paper No. 8, is acknowledged. Claims 1 and 5-19 are currently pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

-Claims 1, 5, 7-10, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts et al. (US 5,320,099), and in view of Wehrli et al (US 4,777,957).

Roberts teaches the following structures:

- Applying a constant rf and magnetic field gradient, which would inherently perturb arterial spin of blood flow and reflect off the sample so it would be detected. (Column 15, lines 18-22 and column 21, lines 20-34)
- Acquire first tagged image (Column 21, line 40).
- Apply a second amplitude-modulated rf at 60 Hz (column 15, lines 30-38), understood to mean applying rf signals having periodic or intermittent amplitudes inversed rf and magnetic field gradient, which together would inherently mimic effects of constant RF radiation unrelated to blood flow, regardless of whether it is the intended effect. (Column 22, lines 4-9)

- Acquiring a second untagged image. (Column 21, lines 40-45)
- Generating difference signal based on first and second image representing blood flow image. (Column 8, lines 50-55 and column 21, lines 43-46.)
- Waiting a transit delay period, which is interpreted as an echo delay, (Column 19, lines 10-43) or a trigger delay. (Column 19, lines 44-63)

However, Roberts fails to teach determining of a duration of transit delay. Wehrli teaches a method for measuring and imaging fluid flow, comprising the waiting of a transit delay period before acquiring images, (Column 2, lines 1-49 and column 12, lines 1-35) as well as determining time delay T_A . (Column 12, lines 30-35) It would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the Wehrli's teachings to Roberts's method such that a blood perfusion image may be generated.

-Claims 6, 11, and 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts et al and Wehrli et al., as applied in claim 1 above, and further in view of Mistretta et al. (US 5,408,180)

Roberts and Wehrli meets all the claims except that it fails to teach analog/digital conversion of MR signals. However, it is well known in the art of MR imaging that analog MR signals undergo analog-to-digital conversion, as Mistretta et al. shows (Column 7, lines 13-30) so that a processed subtraction image can be generated.

Response to Arguments

3. Applicant's arguments with respect to claims 1 and 5-19 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

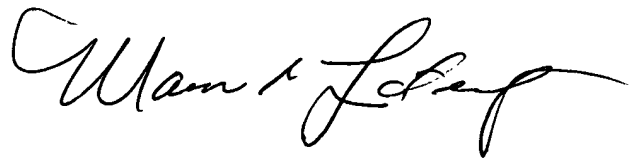
4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeoyuh Lin whose telephone number is (703) 306-5990. The examiner can normally be reached on m-f, 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marvin Lateef can be reached on (703) 308-3256. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-0758 for regular communications and (703) 308-0758 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0858.

JYL

JYL
March 17, 2003



Marvin M. Lateef
Supervisory Patent Examiner
Group 3700